

R e m a r k s

Claims 1, 3, 4, 6-9, 11 and 13-20 are pending in the application.

Claims 1, 3, 4, 6-9, 11 and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Combs et al. (U.S. Patent No. 6,751,417 B1, hereinafter "Combs") in view of Cook et al. ("Optical fiber access-perspectives toward the 21st century," hereinafter "Cook").

Each of the various rejections and objections are overcome by amendments that are made to the specification, drawings, and/or claims, as well as, or in the alternative, by various arguments that are presented.

Any amendments to any claim for reasons other than as expressly recited herein as being for the purpose of distinguishing such claim from known prior art are not being made with an intent to change in any way the literal scope of such claims or the range of equivalents for such claims. They are being made simply to present language that is better in conformance with the form requirements of Title 35 of the United States Code or is simply clearer and easier to understand than the originally presented language. Any amendments to any claim expressly made in order to distinguish such claim from known prior art are being made only with an intent to change the literal scope of such claim in the most minimal way, i.e., to just avoid the prior art in a way that leaves the claim novel and not obvious in view of the cited prior art, and no equivalent of any subject matter remaining in the claim is intended to be surrendered.

Also, since a dependent claim inherently includes the recitations of the claim or chain of claims from which it depends, it is submitted that the scope and content of any dependent claims that have been herein rewritten in independent form is exactly the same as the scope and content of those claims prior to having been rewritten in independent form. That is, although by convention such rewritten claims are labeled herein as having been "amended," it is submitted that only the format, and not the content, of these claims has been changed. This is true whether a dependent claim has been rewritten to expressly include the limitations of those claims on which it formerly depended or whether an independent claim has been rewritten to include the limitations of claims that previously depended from it. Thus, by such rewriting no equivalent of any subject matter of the

original dependent claim is intended to be surrendered. If the Examiner is of a different view, he is respectfully requested to so indicate.

Rejection Under 35 U.S.C. §103

Claims 1, 3, 4, 6-9, 11 and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Combs in view of Cook. The rejection is traversed.

Claim 1 is amended to clarify that communication between a central office and customer premises is in an optic access network that is all-optical in the downstream direction. The relevant portion of claim 1 now reads: “In an optical access network...a passive all-optical downstream path having a first termination at said central office and a second termination at said customer premises.” The amendment is fully supported by the original Abstract and paragraphs 1 and 6 of the Specification. Applicant submits that the amendment requires no additional search by the Examiner and that entry is proper.

Claim 1 is non-obvious because the primary reference Combs does not teach or suggest “a passive all-optical downstream path.” Applicant respectfully reiterates that Combs only teaches a single path active network, where all traffic between Head-End 102 and End-Users 112 must pass through active components in both directions (the Mini-Fiber Node 108 is at least one active component).

The Office Action claims that paths associated with Combs’s optical splitters 316 in Fig. 3 and 304 in Fig. 4 disclose passive optical downstream communications. Respectfully, this is not correct. Both splitters are integrated components in the Mux-Node 104 of Fig. 1. The Mux-Node is a decidedly active component as described in Combs col. 11 lines 24-52 “Fig. 8 shows an exemplary flowchart of a process of the mux-node 104. In step 1000, the head-end lightwave interface device 410 receives optical signals from the head end 102, converts the optical signals to electric signals and forwards the electrical signals to the splitter 414...” (emphasis added). Thus it is not evident that the communication path suggested by the Office Action, beginning at the Head-end 102 and terminating at the Mini-Fiber Node 108, is even an entirely passive pathway.

In addition, Combs does not teach or disclose the feature of claim 1 “a second termination at said customer premises.” The Office Action suggests that Combs teaches

“a second termination at an intermediate distribution site before the customer premises.” Respectfully, this is an inherent contradiction. An “intermediate” distribution cannot also be a “termination.” Furthermore, Combs’ Mini-Fiber Node108 that the Office Action substitutes for Applicant’s customer premises (i.e. the second termination) to support its obviousness rejection does not have the required functionality for a termination point (*see* Combs Fig. 5, the Mini-Fiber Node 108 has no functionality to operate as a termination point, it can only pass signals to and from the access network and the End-users).

The Office Action also asserts that there is a movement towards expanding use of fiber-to-the-home FTTH and fiber-to-the-building FTTB and that such are suitable “alternative distribution configurations [to Combs].” Applicants are well aware of the current push towards greater use of FTTH and FTTB (*see* Specification par. 2). Applicants have also pointed out that there are access networks that implement either all fiber passive optical networking or all fiber active optical networking that are known in the art (*see* Specification par. 3-5).

However, the Office Action does not assert how one could combine the references Combs and Cook to create an operable system like Applicant’s. The mere knowledge of FTTH and FTTB does not suggest one way or the other whether downstream communication is passive or active as FTTH and FTTB are equally suitable for both passive and active network configurations. Nor does the Office Action refer to which portions of the references would render it obvious for one to combine the references in the manner claimed by the Applicant. The Supreme Court recently held that:

a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art...it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

KSR Int'l Co. v. Teleflex Inc. 550 U.S. ___, 127 S. Ct. 1727, 82 U.S.P.Q.2d 1385 (2007).

Upgrading Combs to implement FTTH would involve extending the fiber in the Combs’ Fig. 1 from the Mini-Fiber Note 108 to the End-user 112 and would merely

create an FTTH active optical access network which is known in the art. Accordingly, neither Combs nor Cook suggests modifying Combs to implement the Applicant's dual system. The rejection under 35 U.S.C. §103(a) is therefore improper.

In fact, Combs would need to be substantially modified in a way that is not taught or disclosed by Combs, Cook or a combination of the two in order to achieve the embodiment of Applicant's claim 1. At least the following modifications would be required: the Mux-Node 104 of Combs' Fig. 1 would need to be substituted by the A/P Access Unit 120 (Fig. 1) or 220 (Fig. 2) in Applicant's system, the Mini-Fiber Node 108 removed, and each End-user 112 connected to the A/P Access Unit via separate fiber optic cables. In such circumstances, requiring a total overhaul of the references' teachings, courts have held that the claims are non-obvious. *See In Re Ratti*, 270 F.2d 810, 123 USPQ 349 (C.C.P.A. 1959) ("the combination of [references] is not a proper ground for rejection ...This suggested combination of references would require a substantial reconstruction and redesign of the elements...as well as a change in the basic principles under which the [primary reference] was designed to operate.")

Alternatively, considering Combs' Mini-Fiber Node 108 Fig. 1 as the "second termination" as suggested by the Office Action (p. 2 lines 1-3) would result in a non-functional passive optical network. The network would be non-functional because (1) one would need to substitute an End-User 112 for the Mini-Fiber Node 108 (2) the End-user would require the additional capabilities of receiving and transmitting optical data, and (3) there would be upstream data collision at the Mux-Node 104 without implementation of a time division multiplexing or similar shared access protocol. This would require an additional controller and appropriate software/hardware at the Mini-Fiber Node 108 and Head-end 102 (see Cook p. 79-80 "a multiple access protocol must be implemented to ensure that the returning bit stream from each customer is appropriately synchronized at the exchange."). In similar circumstances wherein the proposed combination of references would result in an inoperable device, courts have held that the references cannot support an examiner's *prima facie* case for obviousness. *See McGinley v. Franklin Sports Inc.*, 262 F.3d 1339, 60 USPQ2d 1010 (Fed.Cir. 2001) ("If references taken in combination would produce a 'seemingly inoperative device,' we

have held that such references teach away from the combination and thus cannot serve as predicates for a *prima facie* case of obviousness.”)

The features/modifications required to practice the method of Applicant’s claim 1 are not taught or suggested in Combs or Cook. In effect, one would need to completely redesign Combs to even create a working passive optical network that is known in the art. For at least this reason, claim 1 is non-obvious and the rejection under 35 U.S.C. §103(a) improper.

In addition, Cook explicitly teach away from Combs and Applicant’s system/method. As stated in Applicant’s Specification at par. 5, passive optical networks were designed to overcome perceived limitations with active optical networks. The Cook reference, acknowledging efforts to advance both active (“active double star” or ADS) and passive optical network (PON) approaches comes out in clear favor of PONs: “In Europe the drive has centered more on the deployment of fiber systems directly to buildings—thus avoiding the need for active nodes in the network... BT [British Telecom] studies have shown that the PON approach has greater benefits in minimizing the proportion of the per line cost incurred in deploying equipment at the exchange and in the fiber infrastructure down to the customer...The synergy between PON systems and SDH [synchronous digital hierarchy] is expected to grow” (Cook p. 80-81 (both authors are associated with British Telecom Labs)). Cook is also critical of both Combs’ and Applicant’s approaches, stating “The drive [in the U.S.] has been to develop FTTC systems (ADS and PON) for general deployment in residential areas. Given the relatively low density of U.S. housing developments, this ideally requires very small active nodes to be deployed at the curb serving only 4 living units (LUs). The problems of engineering, installing powering and maintaining such large numbers of small nodes, and at the same time achieving acceptable whole life costs, are particularly difficult” (Cook p. 80). Combs’ system requires an “active node” (the Mini-Fiber Node 108) with active components, deployed in the field to service a small handful of End-users 112. Applicant’s system, while vastly different than Combs’, also requires a locally deployed node with active components (the A/P Access Unit 120 in Fig. 1 or 220 in Fig. 2 for upstream data transmission) even with fiber extending to the customer premises.

Accordingly, Applicant submits that the proposed combination of Combs and Cook is not obvious under 35 U.S.C. 103(a) as Cook teaches away from Applicant's system/method.

For at least each of the foregoing reasons, the combination of Combs and Cook does not teach or suggest Applicant's invention of at least independent claim 1 as a whole. Accordingly, Applicant respectfully submits that independent claim 1 is patentable under 35 U.S.C. 103 over Combs in view of Cook. Independent claims 16 and 18 recite similar limitations to claim 1, and are thus patentable for at least the same reasons presented above with respect to independent claim 1. Since the dependent claims depend from the respective independent claims and include all the limitations of the respective independent claim from which they ultimately depend, each such dependent claim is also allowable over Combs in view of Cook under 35 U.S.C. 103.

Accordingly, claims 1, 3, 4, 6-9, 11 and 13-20 are patentable under 35 U.S.C. 103(a) over Combs in view of Cook. Therefore, the rejection should be withdrawn.

Additional Remarks

Claim 3, which depends from claim 1, is likewise amended to clarify that the subject network is an optical access network and that downstream communication is all-optical. Independent claims 8, 16 and 18 are amended in the same manner as independent claim 1. Claim 11, which depends from claim 8, and claims 19-20, which depend from claim 18, are similarly amended.

With further regard to claim 11, this claim originally was a multiple dependent claim following from claim 10, which depended from claim 8. In Applicant's prior 27 C.F.R. 1.114 Response dated April 10, 2008 claim 10 was cancelled. It was intended that claim 11 also be amended to depend directly from claim 8 since claim 10 was cancelled. However, the deletion and insertion marks were mistakenly omitted. Applicant has included such marks in this submission in addition to the amendment discussed above.

Independent claim 18 is also amended to provide proper antecedent basis for a "said passive all-optical downstream path." Applicant submits that entry of the abovementioned amendments is proper as the amendments are fully supported by the disclosure as discussed above regarding claim 1, the amendments do not change the scope of the claims, and no additional search is required by the Examiner.

Conclusion

It is respectfully submitted that all outstanding rejections have been overcome and this application is now in condition for allowance. Reconsideration and allowance are, therefore, respectfully solicited.

If, however, the Examiner still believes that there are unresolved issues, the Examiner is invited to call Eamon Wall at (732) 530-9404 so that arrangements may be made to discuss and resolve any such issues.

Respectfully submitted,

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